4:15

912-2 Biphasic Flow Reaction After Nitroglycerine Provocation in Patients With Myocardial Bridging Demostrated by Intracoronary Doppler Flow Measurement

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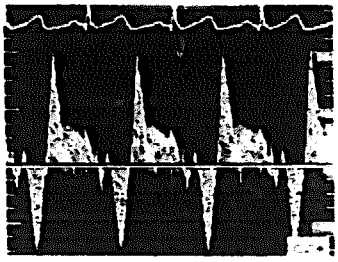
Background: Patients with myocardial bridging (MB) experience angina and ischemia under nitroglycerine treatment. We have reported that patients with MB had reduced or no systolic antegrade flow in the bridge segment. The purpose of the study was to study coronary flow pattern under nitroglycerine administration in patients with MB using intracoronary Doppler.

Methods: We studied 48 patients who had angiographic sign of myocardial bridging in the left anterior descending coronary artery with FloWire® (Cardiometrics). Coronary flow velocity reserve was derived by calculation the ratio of average peak flow velocity at rest and after intracoronary injection of 18 μg adenosine. A bolus of 200 μg nitroglycerine was then injected intracoronarily with simultaneous registration of the coronary flow.

Results: Coronary flow velocity reserve was 2.0 ± 0.54. A characteristic early diastolic "finger-tip" flow phenomenon was observed in 42/48 (88%) patients. All patients were found to have reduced or no systolic antegrade flow. After nitroglycerine provocation, an enhanced "finger-tip" phenomenon could be observed in all patients. In addition, 37/48 (77%) patients were found to have a late systolic retrograde flow in the segment proximal to the bridge with a flow velocity of −22.2 ± 13.2 cm/second.



Conclusion: Nitroglycerine will enhance the systolic compression of the bridge segment and subsequentely enhance the reduction of the systolic antegrade flow. The nitroglycerine provocated systolic retrograde flow may worsen myocardial ischemia. Therefore, nitroglycerine administration should be avoided in patients with MB.

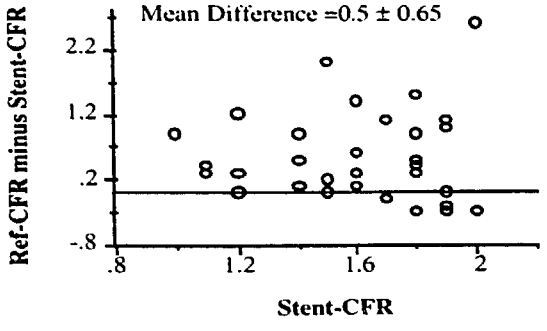
4:30

912-3 Heterogeneity of Persistent Impairment of Coronary Flow Reserve After Stenting

C. Di Mario, L. Di Francesco, J. De Gregorio, J. Moses[1], E. Lawrence[1], A. Colombo. *On behalf of the DESTINI-CFR Investigators: Columbus Clinic, Milan, Italy; [1]Lenox Hill, NY, USA*

After stenting, the normalization of coronary vascular conductance is not always associated with a normalization of coronary flow reserve (CFR). We measured the CFR distal to stents after final expansion and compared this with the CFR in a normal reference artery (Ref-CFR).

Results: In the 37 patients with a Stent-CFR ≤2.0, hypertension, diabetes and hypercholesterolemia were present in 51%, 27% and 30% of cases respectively. After stenting, the residual diameter stenosis was 5.6% ± 9.9 with a minimal lumen diameter of 3.0 ± 0.5 mm. When the difference between Ref-CFR and Stent-CFR is plotted against the Stent-CFR, 16 patients (43%) showed a positive difference exceeding the 20% tolerance range established by CFR measurements in multiple normal arteries in the same patient.



Conclusion: Velocity measurements in a normal reference artery demonstrate that the CFR impairment observed after stenting is limited to the treated vessel in a significant number of cases, suggesting transient (procedure-related) or persistent (myocardial scarring) changes in the microvascular response in the distribution of the stented artery.

4:45

912-4 Eventfree Survival Following Deferral of Coronary Interventions Based on Relative Flow Velocity Reserve Derived From Intracoronary Doppler Measurements

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Background: Assessment of coronary stenosis severity based on intracoronary Doppler measurements can be improved using a relative flow reserve instead of a single distal coronary flow reserve (CVR). The new index of "relative flow velocity reserve" (RFVR) was defined as the ratio between CVR in the stenosed target vessel to CVR in a nonstenosed reference vessel. RFVR has been demonstrated to correlate well with the "fractional flow reserve" based on pressure measurements. In parallel, only a RFVR value of <0.75 indicates a hemodynamically significant stenosis.

Methods: Consequently, coronary intervention was deferred in 28 patients with stable angina pectoris and a RFVR ≥0.75. Preinterventional noninvasive diagnostics showed no unequivocal signs of ischemia. Quantitative coronary angiography measured a reference diameter of 3.2 ± 0.4 mm, a lesion diameter of 1.4 ± 0.5 mm, and area stenosis of 77 ± 9%. Patients had no myocardial infarction in the respective perfusion territories.

Results: In the follow up period of 10.1 ± 2.0 months no patient experienced any major cardiac event with respect to death, myocardial infarction, or target lesion revascularization. Only in one patient angina pectoris deteriorated as the patient developed a de novo lesion in the contralateral vessel.

Conclusion: Clinical decision making using intracoronary Doppler measurements is a practicable approach in patients with intermediate lesion severity. Deferral of patients based on relative flow reserve seems to be a safe and cost effective strategy. Larger trials have to validate this new concept.

913 Cardiac Remodeling With Aging

Wednesday, April 1, 1998, 4:00 p.m.–5:00 p.m.
Georgia World Congress Center, Auditorium

4:00

913-1 Is the Rate of Decline of Age Related Left Ventricular Diastolic Compliance Similar Among Ethnic Groups?

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LV diastolic compliance gradually declines with age. Most prior cardiac population studies are primarily of white subjects and have failed to include minority subjects. Thus, we measured the transmittal E/A, a simple measure of diastolic compliance, at the tip of the mitral leaflets, for control subjects enrolled in the Minority Risk Factors and Stroke Study (a case control study of 3 ethnic groups in New York City) at least 45 years of age. The mean E/A of White, African Americans (AA) and Hispanics (Hisp) subjects are displayed by decade.

		45–54	55–64	65–74	75–84
White	n	27	51	92	45
	mean	1.25	1.05	0.99	0.87
AA	n	57	47	62	27
	mean	1.21	0.99	0.90	0.80
Hisp	n	38	49	45	12
	mean	1.12	0.96	0.84	0.73

The slopes of regression for E/A are progressive with age by decade for White, AA and Hisp and are 0.0102, 0.0138 and 0.0156, respectively. Though not significantly different from each other, the overall trend of decreasing E/A with age is significant ($p < 0.001$) for each race. Thus, though demonstrating subtle differences, age related decline in diastolic compliance is similar among the 3 ethnic groups studied.